

NFIC ROUTING SLIP

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2014/01/07 : CIA-RDP78B05707A000100100006-7

FROM: Chief, TP & DS

DATE: 24 July 1962

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*Encl. ret. 8/27/62 mt*

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TCS-12891-62-KH  
Copy No. 1 of 6 copies  
24 July 1962

MEMORANDUM FOR: Director, NPIC

THROUGH: Executive Director, NPIC

SUBJECT: Technical Evaluation of Satellite Photographic Reconnaissance Materials

REFERENCES:

- (a) Memorandum from Chief, Technical Intelligence Division, to Executive Director, NPIC, dated 20 June 1962; subject: Film Evaluation Report (BYE-1534, with two attachments)
- (b) [ ] Cable (IN 39952), dated 21 June 1962 50X1
- (c) Memorandum from Chief, Technical Intelligence Division, to Operations Officer, NPIC, dated 25 June 1962; subject: Review of SPPL Report No. 101-1-3 (TCS-12583-62-KH)
- (d) Memorandum from [ ] to Chief, Technical Plans & Development Staff, dated 27 June 1962; subject: SPPL Report, Mission 9029 (BYE-1802) 50X1
- (e) KWBLADE Cable (IN 40881), dated 28 June 1962
- (f) [ ]-X Cable (OUT 21636), dated 6 July 1962 50X1
- (g) [ ] Cable (IN 43338), dated 21 July 1962 50X1

1. A review has been made of the technical requirements for an analytical photographic evaluation of satellite photographic materials. This review has provided a chronology of those reports routinely and otherwise prepared in an attempt to satisfy those requirements. Discussions with the primary beneficiaries of such information have clarified their specific needs and the actual utility of the information provided them in this regard.

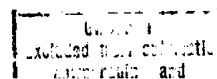
2. There are a large number of pertinent factors which must be considered in arriving at a recommendation which attempts to spell out the optimum method for providing these data to the persons and organizations who have firmly established a **genuine** need for them. These are:

a. The results of an analytical evaluation of photographic material are generally considered to be of interest only if such analysis has been made of the original negative.

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b. Only a preliminary, and necessarily cursory, examination of the original negative is possible prior to its use in the preparation of multiple duplicate positive copies.

c. A more detailed, but essentially subjective, evaluation is made of the original negative material after it has been used for the preparation of duplicate copies and has been delivered to NPIC, usually about three weeks after the completion of the mission.

d. The original negative is retained at NPIC, usually for a minimum of three weeks after its receipt, for the purpose of using it for the preparation of high quality duplicates, stereograms, enlargements and the application of special enhancement techniques to assist the photo interpreters in their analyses. In addition, the original negative is used, where necessary, for the extraction of measurement data using precise photogrammetric equipment.

e. In two instances to date, selected portions of the original negative from satellite missions have been sent to AFSPPL for quantitative analysis. However, a considerable time delay of about six weeks after the mission was involved in its delivery to AFSPPL because of the reasons mentioned.

f. Specialized analytical devices, such as microdensitometers, photo micrographs, precision enlargers and electronic quality meters, should be employed in the determination of quantitative values to describe the many factors which pertain to photographic image quality.

g. Skilled and experienced personnel are required for the proper operation of such quality measuring instruments in order that the results obtained are objective and correct.

h. Correlation between preflight handling of the negative material, flight operational conditions and postflight handling, including chemical processing and printing operations, must be made if the analysis is to be meaningful for the purpose of determining cause, effect and possible corrective procedures for image degradations.

i. Extensive and time-consuming photogrammetric analysis must be performed in order to determine the flight conditions necessary for such correlation which precludes the completion of an analytical photographic evaluation at a prior time.

j. An apparent incompatibility between the time required for a detailed technical analysis of photographic quality and the speed at which such information is necessary in evaluating systems' performance indicate that the evaluation report must be prepared on a somewhat more limited scale than the AFSPPL report in order to be useful and serve the basic purpose for which it is being prepared.

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3. In view of the actual requirement for information which would be made available by the following recommendations, it is felt that the utility of an additional analytical photographic evaluation would be of only academic value. From a much longer range and historical standpoint, the continuance of evaluations, such as those prepared at AFSPPL, could only remotely be deemed worth the effort. Since the entire satellite photographic program to date can be classified as almost experimental because of continued development efforts and the application of new techniques and materials, it follows that such statistics as might be prepared from lengthy quality analyses would be only marginal in value.

4. For an analysis of photographic quality, which would provide the necessary information within the time when it will be useful for evaluation in order to effect corrective changes, it is recommended that NPIC, rather than AFSPPL, perform photo-physical measurements as follows:

- a. Microscopic examination of imagery to ascertain quantitative image motion effects.
- b. Examination with microscopic stereo viewing equipment to evaluate contribution of stereoscopic photography.
- c. Microscopic examination of flight film to evaluate focus of camera as a function of thermal environment or equipment malfunctions.
- d. Microscopic examination to provide evaluation of information losses due to scratches, tension and pressure marks, light leaks, coating defects and other similar phenomena.
- e. Microscopic and microdensitometer examination to evaluate exposure and contrast of film.
- f. Determination of ground resolution by use of microscopic mensuration equipment.
- g. Examination of film processing sequence and records to determine processing gamma, processing uniformity and presence of processing stain.

These measurements will be made on five consecutive frames from every third operational pass and each frame of every engineering pass from each satellite reconnaissance mission as soon as the original negative has been delivered to NPIC, in a manner coordinated with the use of original negatives as required by NPIC operating components. It is intended that a quality analysis, as described above, be made by NPIC of the original negative from all satellite photographic reconnaissance missions, regardless of the identity of the sponsoring agency.

  
Chief, TP & DS

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Enclosures: Seven referenced memoranda.

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The recommendation in paragraph 4 is concurred in.

*Concur in paragraph 4, but with reservations concurred in attached memo.*[redacted]  
Chief, Technical Intelligence Division*25 July 1962*  
Date

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\* [redacted]  
Operations Officer, NPIC*25 July 1962*  
Date

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NPIC/TP&amp;DS: [redacted]

50X1

\* Concur <sup>with</sup> but reservations outlined by [redacted] 50X1

The approach recommended by [redacted] in [redacted] 50X1

[redacted] 4538. I believe offers the best solution in that outside specialists, assisted by NPIC specialists could provide for the most objective evaluations. 50X1

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